

IN THE SPECIFICATION:

Page 1, between the title and the first heading, please insert the following:

This application is a division of U.S. patent application S.N. 09/972,910, filed October 10, 2001.

Page 1, lines 12-20, please rewrite as follows:

Fibre-reinforced composites (FRC) are gaining popularity to be used as dental and medical biomaterials. The use of the FRCs in medical and dental applications can be justified by the high strength and biological rigidity of the material. Technological problems in using the FRC with dental and medical ~~resinous~~ resinous materials, mainly mono or multifunctional acrylates have been overcome by the recent inventions, for example described in US patents 5,846,640 and ~~6,179,410~~ 6,197,410, relating to the preimpregnation of the fibres with polymers and monomers and their combinations.

Page 2, lines 3-12, please rewrite as follows:

Although the technological problems of ~~the~~ manufacturing ~~the~~ dental and medical appliances using FRCs are resolved to large extent, some shortcomings still occur in these appliances. One of the shortcomings is difficult shaping of the pontic and crown parts

of the bridge. Another shortcoming relates to the relatively high wear of the occlusal surfaces of the composite materials as those described in US 4,234,310 or those polymerized by direct technique, i.e. in the patient's mouth. In dental and orthopaedic endosseus implants made of FRCs, there is also a need to attach a tooth crown, bridge, or an artificial joint to the implant.

Page 2, lines 15-22, please rewrite as follows:

An important property for the dental FRC device from the dentists and dental technicians perspective relates to the fabrication process of the device. The process should allow an effective way to produce FRC devices such as bridges and crowns having veneers and occlusal surfaces ~~of~~ with good esthetic properties and wear resistance. Endosseus implants should contain wear resistant artificial joint surface which can be obtained by the present invention.

Page 3, lines 5-9, please rewrite as follows:

The object of the invention is to create a medical or dental ~~devices~~ device including one or several solid bodies attached to a shapable prepreg. Such devices shall be easy to attach to various frameworks in the manufacture of a final dental or medical FRC appliance.

Page 3, lines 16-22, please rewrite as follows:

The solid bodies can form the surface of the tooth in one piece or in several smaller pieces held together by the shapable prepreg. The prepreg shall be easy to place on the FRC framework of the crown or bridge made e.g. with the technique described in US patents 5,846,640 and ~~6,179,410~~ 6,197,410. After being correctly placed to the occlusion, the resinous matrix of the prepreg shall be polymerizable e.g. by autopolymerization or by light activation.

Page 6, lines 15-19, please rewrite as follows:

The prepreg part of the device shall be a shapable prepreg. The wording "shapable prepreg" means that the prepreg shall be easy to bend at low temperatures such as room temperature or human body temperature. Such shapable prepregs are disclosed e.g. in US patent ~~6,179,410~~ 6,197,410.

Page 6, line 20 to page 7, line 13, please rewrite as follows:

The fibers of the prepreg part of the device can be inorganic or organic fibers or mixtures thereof. As preferable fibers can be mentioned glass fibers, silica fibers or carbon/graphite fibers. The orientation and form of the fibers in the fiber matrix can be either two-dimensional continuous or short fibers depending ~~up to~~ upon the desired mechanical properties. Three-dimensional chopped

glass fibers are preferred due to the possibility to bring the solid body or bodies into good contact with the three-dimensional fiber network. Also the isotropic mechanical properties which are obtained by using the three-dimensional fibers is an advantage. In a dental appliance, a sufficient thickness of the three dimensional fiber product allows penetration of the solid body or bodies (which will create an artificial tooth crown) into the fiber rich phase when upper and lower teeth are in contact ~~to~~ with each other (see Figure 3). The possibility of the individual solid bodies to penetrate in the prepreg part having a sufficient thickness results in a precise occluding contacts of the solid bodies to the opposing teeth.

Page 7, line 20 to page 8, line 2, please rewrite as follows:

Preferred resinuous materials are, for example, poly-, oligo-, tri-, di- and monomethylmethacrylate, Bis-GMA, TEGDMA, dendrimers and the like. The unpolymerized ~~resinuous~~ resinous matrix may further contain part or all of the polymerization initiators and activators such as camphorquinone, dimethylaminoethylmethacrylate and dimethylparatoluidine.

Page 8, line 8 to page 9, line 8, please rewrite as follows:

The solid body can be made of an inorganic material, an organic material or a combination thereof. For dental applications, the outermost surface (i.e. the part of the surface not contacted with the prepreg) of the solid body (bodies) ~~included~~ included in the device is preferably made of particulate or fibre filler composite, ceramics, glass or glass-ceramic to the form of facial, buccal, lingual or occlusal surface of the tooth. In the case of abutment of a bridge, the device can also include a solid body forming the crestal surface of the pontic. The solid bodies are embedded into the three-dimensional network of fibres and ~~resinous~~ resinous matrix. The part of the surface of the solid bodies which is brought into contact with the prepreg is preferably chemically and/or mechanically pre-treated to obtain good bonding of the solid bodies to the prepreg. In the case of composite bodies, this is obtained e.g. by free radical polymerization reaction of the remaining unsaturated functional groups on the surface of ~~the body~~ the body, or additionally by interdiffusion bonding (interpenetrating polymer networks, IPN), or by using mechanical interlocking of the solid body by means of non-impregnated or partially impregnated fibers. For ceramic or glass bodies, the bonding is preferably obtained by silane coupling agents. Alternatively or additionally, a porous structure of the contact surface of the solid body can be used to facilitate

mechanical interlocking between the solid body and the prepreg part.

Page 10, lines 3-13, please rewrite as follows:

Figure 1 is a perspective view of a dental device according to this invention. The device comprises a shapable prepreg ~~part~~ part 1, formed as a soft, curved plate or mat, which comprises fibers, preferably three-dimensionally oriented or randomly directed fibers. The fibers may further be embedded in a resinous matrix comprising a polymerizable monomer, a polymerizable dendrimer, or a combination thereof. The prepreg may further comprise a polymer, and furthermore initiators useful in the curing step in the use of the device. Four solid bodies (particles) 2a, 2b, 2c, 2d, which in this case together will form an artificial tooth, are attached to the prepreg part 1.

Page 12, line 15 to page 13, line 8, please rewrite as follows:

Figure 6 is a cross section of the pontic comprising the framework 5 and the crestal surface 6. The framework 5 of the bridgework is preferably made of continuous unidirectional or woven glass fiber preregs as described in the US patents 5,846,640 and ~~6,179,410~~ 6,197,410. The device including the solid bodies

attached to the prepreg is placed on the framework 5. This figure shows that both sides 1' and 1'' of the shapable prepreg plate 1, bearing the solid bodies of which only 2b and 2d can be seen, are curved so as to follow the surface of the framework 5, so that side 1' will create the buccal surface and side 1'' the palatal surface of the pontic. Before curing (e.g. by light polymerization), the solid bodies are aligned to precisely to the occlusion by biting upper and lower teeth together (see Figure 3). The resinous phase of the prepreg is now polymerized and the solid bodies are bonded and mechanically interlocked to the three dimensional network of the glass fibers in the prepreg. The clefts between the solid bodies 2 are later filled, e.g. with restorative composite resin.

Page 13, lines 9-20, please rewrite as follows:

Figure 4 illustrates the preparation of the device for use on a pontic of a dental bridge, said device shown in Figures 1 and 2. In this alternative, the solid bodies (of which 2a and 2b are seen in the Figure), have been prefabricated before they are pressed into the shapable prepreg plate 1. The bodies 2a...2d have been made in the shape and color of the cusp of the tooth, using dental ceramics or particulate filler/fibre composites. The surface of the bodies brought into contact with the prepreg plate, i.e. the

contact surface 2'', is preferably chemically treated (with silane coupling agents, preferably [[gamma-propyltrimetoxysilane]] gamma-propyltrimethoxysilane) and/or mechanically roughened for good adhesion and interlocking of the solid bodies to the ~~resinuous~~ resinous part of the prepreg 1.

Page 13, line 21 to page 14, line 5, please rewrite as follows:

The fiber product of the prepreg is preferably a three dimensional ~~shopped~~ chopped strand mat (thickness about 1.0 - 10 mm) of glass fibers treated with a silane coupling agent. This chopped strand mat is preferably impregnated with nonpolymerized resinuous monomers, dendrimers or with highly viscous monomer-polymer gel, for example as described in US patent 6,197,410. The resinuous matrix, e.g. the impregnation polymer, contains preferably the chemicals required for the subsequent polymerization of the resinuous matrix by light, ~~microwave~~ microwave, heat, etc. initiator means.

Page 17, lines 11-14, please rewrite as follows:

Figure [[8]] 9 shows a medical device useful as hip prosthesis. The prepreg 12 bears a solid body 13 which has the

shape and size of a condyle for an artificial joint. The prepreg part is preferably coated with a suitable material before use.

Page 17, line 19 to page 18, line 5, please rewrite as follows:

This invention enables the manufacturing of a strands of prepregs, where each prepreg bears one crown for a certain tooth. The different prepregs can thus be arranged after each other to form a strand corresponding to the teeth in the upper jaw as well or the lower jaw. The user can thus select a ~~the~~ part of the strand (comprising one or several teeth) for use. The cut-off lines between the individual prepregs can be marked so as to facilitate ~~that~~ the user's work. Alternatively, all the crowns for the teeth in the upper or lower jaw can be arranged on the same prepreg piece.